

Seminar/Workshop

CASE STUDIES IN MATHEMATICAL PRACTICE

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Monday June 29–Saturday July 4

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Mathematics is a strikingly powerful but strange *intellectual* form of Understanding. The seminar presents an approach, comparative case studies, to locating philosophical ideas that help explain how powerful intellectual understanding is achieved; ideas beyond —well-understood— formal proof and axiomatic systematization. We present examples in depth, notably the contrast between Euclidean-style synthetic plane geometry and Descartes' analytic geometry.

Such studies have, so far, led to a focus on *how representations function*. That is, primarily expressive-usage (not: metaphysical) differences directly address differences in power of contrasting approaches to problems, where we pre-theoretically recognize conceptual re-structuring.

My presentation/discussions on Monday-Thursday and Sat AM form one connected, many case-study based, argument for a representation-based functional-role perspective on mathematical thought. (Some of the headers may be mysterious to the uninitiate.) The Friday session aims to initiate an exploration of non-exact representations in mathematical thought, of course taking off from geometrical diagrams and the notion (if there be one) of geometricality.

Saturday afternoon is devoted to overall responses to the seminar (presumably, including push-back from Fregeian-analytic/logical and historian's perspectives).

The other presentations (precise titles not yet available):

Tues PM: Jeremy Heis on: Early moderns on the ancient constructability of conics through 5 given points. Davide Crippa comments.

Wed PM: Marco Panza on his paper "From Velocities to Fluxions", in A. Janiak and E. Schliesser (d.), *Interpreting Newton: Critical Essays*, Cambridge Univ. Press, Cambridge, etc., 2012, pp. 219-254. Shay Logan comments.

Thurs PM: Jessica Carter on Mathematical Representation and Understanding. Irina Starikova comments.

Fri AM (2): Andy Arana and Jemma Lorenat on Diagrammaticality in 19th C Projective geometry.

Fri PM: Douglas Marshall on Wedderburn's theorem and the Pappus condition in projective geometry. Josh Hunt comments.

Sat PM: Karine Chemla's critical response to the seminar.

CSMP Paris – Schedule Outline

Day	AM1 10–11:10	AM2 11:20–12:30	Lunch *	PM1 2:30–3:30	PM2 3:40–5
Mon 29	Intro PhilMath	Case study method	*	Euclidean Diagram (basic)	(adv)
Tues 30	Descartes' geometrical (Example)	Method (general)	*	modularity (stages)	J.Heis Desc/Newton
Wed 1	Representation & Responsiveness control		*	lin.repr groups	M.Panza Newton
Thurs 2	Knots	Over-specification	*	invariance strategies	J.Carter repres/underst
Fri 3	Geometricality Intro	A.Arana/J.Lorenat 19c Projective	*	GeomGpThy	D.Marshall Wedderburn
	10–11:10	11:20–12:20	*	2:10–3:30	3:40–5
Sat 4	Mathematical Intelligibility/Enhancements Completions	Conclusion	*	Roundtable	K.Chemla Response